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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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03/11/2004

Are Lund

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08/13/2008

WENDEROTH, LIND & PONACK, L.L.P.

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SUITE 800

WASHINGTON, DC 20006-1021

EXAMINER

BHAT, NINA NMN

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/796,970	Applicant(s) LUND ET AL.	
	Examiner N. Bhat	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 28, 2008 has been entered.

2. Applicant has argued that claim 1 is not anticipated by Gudmundsson because the claim calls for a pump where as Gudmundsson teaches a compressor. By definition a compressor is a pump. "compressor" is a pump or other machine that increases the pressure of a gas.[Definition American Heritage Dictionary of the English Language, 4th Ed, Copyright 2000] It the position taken by the examiner that the compressor of Gudmundsson reads generically on a pump and therefore the apparatus of Gudmundsson fully meets applicant's claims as drafted and thus has met the test for anticipation.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Gudmundsson USP 5536893.

Gudmundsson teach an apparatus , note specifically Figure 3, which includes a system for the treatment and transportation of a hydrocarbon containing water, which includes a hydrocarbon source (element 1), a first heat exchanger (element 5), a reactor (6), a second heat exchanger (11) a separator which is shown (element 1c) and a pipeline or storage unit which is

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(found as element 8D which describes storage) not shown.[Note Column 6, lines 1 -67 and Column 9, lines 1-9]. With respect to claim 4, wherein chemicals can be added to the flow, Gudmundsson teach that adding small seed of hydrate crystals to the water to be supplied to the reactor permits the hydrates to be easily grown while in the reactor has been taught in Column 6, line 38-39]. With respect to claim 5, that the means are located between the separators for mixing the flow with a wet gas, this has been taught by adding pressurized water (7) into the reactor as well as adding water, note water line 15, after the reactor as shown in Figure 3 of Gudmundsson. With respect to claims 6 and 7, from the figure secondary separation equipment and heat exchanges are shown for recovering hydrocarbon gas from the flow and from Figure 3, it can be seen that the apparatus includes means for adding cooled condensate under pressure to the reactor as the fluid into the reactor is compressed as well as the water into the reactor is pressurized, the reactor includes a heat exchanger which can inherently function as claimed.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 2-3, and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundsson.

Gudmundsson teach the invention substantially as claimed for reasons delineated above. However, Gudmundsson does not teach that the reactor is coated with a water repellent material. Gudmundsson does not teach that a mixer is located between the first heat exchanger and the reactor.

Gudmundsson teaches a reactor which is capable of providing gas hydrates to a hydrocarbon and simultaneous adding water to the reactor vessel. As described in Gudmundsson, the compressed and cooled gas is transported to a reactor vessel (6) that is supplied with pressurized water to produce gas hydrate (8a) having embedded gas. The pressurized water is supplied via nozzles () and expanded to a lower pressure and to a temperature that results in the formation of gas hydrated. The water pressure is not critical and the pressure can be adjusted to a desired level proved that the pressure is higher than the reactor pressure, the water is dispersed in the form as fine droplets such as provided by the mixer described by applicant. The reactor (6) as described by Gudmundsson can includes stirrers as well as other means to maintain fine droplets of water.[Note Column 6, lines 14-50] To specifically coat the inside of a reactor which would improve the overall performance of the reactor would have been obvious design choice to one having ordinary skill in the art with respect to designing a reactor. Reactor materials of construction are selected based on the application of the reactor and what is to be reacted within the reactor, the reactor described by Gudmundsson function equivalently for the same purposes taught by applicant therefore, to add a water repellent coating to the inside of the reactor would have been obvious if desired. With respect to a mixer located between the first heat exchanger and reactor, although not shown Gudmundsson does teach that mixing the water

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and the hydrate and gases are has been contemplated and describes that the mixing occurs in the region of element 10 where the nozzles are located. The function of mixing has been generically taught by Gudmundsson and to include a mixer to improve and or optimize reaction conditions in the system would have been an obvious improvement to one having ordinary skill in the art at one having ordinary skill in the art would recognize that mixing of the gas with the water, the seeds of hydrate would be much improved when intimate mixing of the ingredients takes place. With respect to claims 8-9 where the mixer is located between the first heat exchanger and reactor and the reactor is coated with a water repellent coating, this would have been obvious to one having ordinary skill for the reasons delineated above, i.e., coating the inside of the reactor and adding a mixer to improve and/or optimize the system overall performance would have been obvious, there is no criticality in adding mixer or the coating to the reactor and adding the mixer and coating are obvious expedients to one having ordinary skill in the art. With respect to claim 10, wherein chemicals are added to system and the system includes a mixer, mixing has been taught by Gudmundsson as well as adding seed hydrate which reads on adding a chemical and it maintained that applicant's invention is rendered obvious as a whole to one having ordinary skill in the art at the time invention was made. With respect to newly added claims 11-14, applicant has now claimed the relative positioning of elements, the apparatus as taught in Gudmundsson teaches providing gas to a separator, which is then subjected to a compression, the fluid stream can be heated by a heat exchanger, the fluid stream is then reacted in a reactor which includes means for mixing as well as provided heated streams and pressurized water. Gudmundsson teach that the mass and energy balance of the streams supplied to the reactor vessel is adjusted to convert the substantial part of the water to hydrate particles thus operating the process with excess gas. The reactor can be

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also operated with excess eater and then water must be separated away. Minor amounts of gas and ay water can flow along with they hydrate particles, unreacted and removed components of gas and flowing water can be recirculated water (7a) is combined with fresh water (7) and separated gas (1c) is compressed cooled and passed directly back to the reactor. The hydrate particles with embedded gas are then transported optionally to equipment. The hydrate particles are cooled and/or refrigerated in unit (11) and then agglomerated. If desired the agglomerated hydrate particles are transported to apparatus (13) which covers the gas impregnated particles with an ice shell. With respect to claim 11, admittedly the exact fluid connections from component to component within the system is not the same as taught by applicant however, it is the position taken by the examiner that to one having ordinary skill in the art at the time the invention was made and from reading the specification of Gudmundsson, applicant's system is rendered obvious and the components taught in applicant system have been taught and suggested, the process parameters for operation of the systems are operated within the conditions, and therefore to include the mixers, heat exchangers, pumps/compressors or means for moving the fluid through the system of Gudmundsson would require the same type of apparatus elements as described by applicant and system for transporting a flow of fluid hydrocarbon although not the same would have been obvious as a whole from the teachings of Gudmundsson.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Waycuilis et al. teach a process for transport of a wet gas through a subsea pipeline.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Bhat/
Primary Examiner, Art Unit 1797